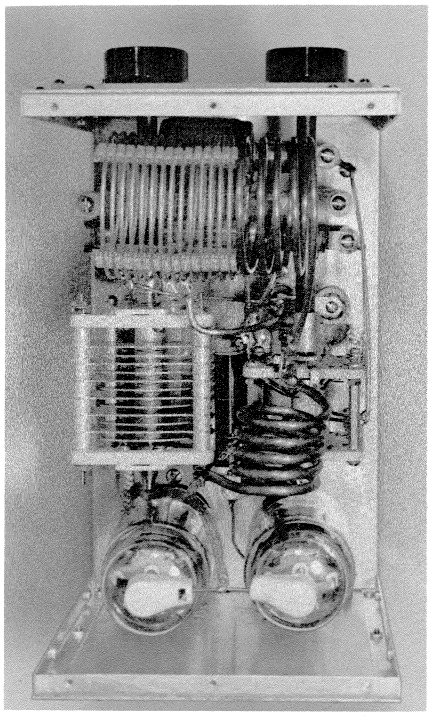
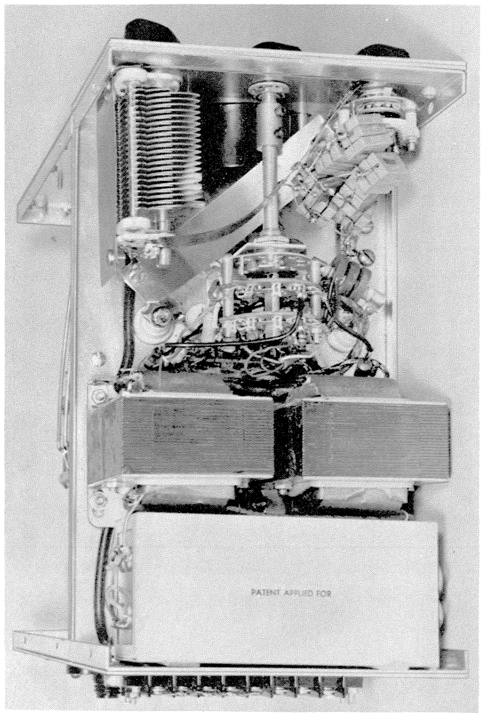


TOP VIEW of the SSB-600 amplifier. Details of tank coil mounting and connections are shown in this view. Allow enough slack in GL-814 plate lead to remove plate caps.



BOTTOM VIEW, showing heavy copper strip connections between C_2, S_2 and the seven 300-mmf. loading capacitors. The FC-30 filament r.f. choke mounts beneath the GL-814 sockets.

SSB-600 (continued from page 3)

plates were cut from 1/16-inch thick sheet aluminum. Pieces of 1/2 x 1/2 x 1/32-inch aluminum angle were then fitted to form a flange to which the shield is fastened. About 38 inches of angle stock is required. If sheet metal bending equipment is available, these flanges could be formed on the end plates.

Perforated sheet aluminum (Reynolds or equivalent) about 10 1/8 x 20 inches is then folded to form the shield cover, as shown in the pictures. The complete enclosure becomes quite rigid when the shield and bottom cover are in place, despite its light weight. The enclosure is then disassembled, including removing front and back panels, to layout and drill holes for the components. Panel layout is shown in Fig. 3.

After punching and drilling holes for the major components, a shield for the meter (M_1) is fabricated as shown in the drawing, Fig. 4, and fastened over the cutout in the chassis to protect the meter from the r.f. field around the plate circuit.

The larger components should be mounted and wired into place. Note that pieces of thin sheet copper flashing have been placed under the chassis between the loading capacitor (C_2) and capacitor switch (S_3) to provide a low-resistance path for the high r.f. currents in this circuit. Copper strip 1/2 inch wide is used for connecting leads in this circuit. This pays off in higher efficiency at 21 and 28 megacycles. A copper-clad or solid copper chassis also would help the efficiency, if available.

Components for the r.f. wattmeter should be mounted underneath in the center of the chassis before the meter switch, S_3, is assembled. Bypass capacitors and other wiring around the tube sockets are installed before the filament r.f. choke is mounted. Return as many bypass capacitors as possible to a common chassis ground. A terminal strip (TS_1) was installed on this model for external power connections, but a suitable multiple-pin jack and plug can be used if desired.

Provision for remote measurement of control and screen grid currents is made by connecting the appropriate current meter between terminals 4 to 7, as follows:

4 to ground:	G-2 (right)	50 ma.
5 to ground:	G-2 (left)	50 ma.
6 to ground:	G-1 (right)	100 ma.
7 to ground:	G-1 (left)	100 ma.

ALL COMPONENTS in this amplifier have been chosen to handle higher power. Thus, a pair of GL-813 beam pentodes could be substituted for the GL-814's if the chassis is made larger; 7 x 12 x 4 inches (A *Bud* CU-3011A Minibox, or equivalent). However, this size chassis also will hold four type GL-814's in parallel, if anyone prefers to run four of these tubes. Larger filament transformers will be required, of course.

If a pair of GL-813's are used, a well regulated negative bias supply will be required to furnish the approximately minus 70 volts of control grid bias required to hold the plate current to a low value with the triode connection. For this your signal would be 3 DB louder at your friend's receiver. This is less than one S unit. It is frequently easier to gain 3 DB with a little antenna work than by many hours and dollars spent on the linear amplifier.

Some amateurs may want to construct this amplifier as a subassembly to go into a chassis that includes a power supply. This chassis may also include a driver amplifier for use with an exciter delivering less than 50 watts output. When built as an assembly to go into a chassis cabinet arrangement the "do it yourself" enclosure construction is not necessary.

The small package, complete amplifier described herein was constructed because it was meant to serve mainly for mobile operation.

ADJUSTMENT AND TUNEUP of this amplifier, after construction is completed, should be done carefully to avoid overloading the tubes for extended periods and thus damaging them. Connect 117 volts AC to terminals 1 and 3, and J_1 to an exciter capable of delivering about 50 watts; the output jack, J_2, to a 50-ohm dummy antenna load capable of dissipating 500 watts; and the "HV" terminal to a power supply delivering about 1,500 volts DC at 300 ma.

Turn on heater power, high voltage, and apply about 5 watts of driving power at 3.9 megacycles. Set S_1 to the 3.5-megacycle position and adjust the plate circuit tuning (C_1) and loading (C_2) capacitors for maximum output with S_3 in position 2 (RF output, forward).

Increase the driving power to about 25 watts and readjust the tuning for maximum output. Then increase the driving power so that 40 milliamperes of grid current is read for each GL-814 in positions 7 and 8 of S_3. Again adjust the tuning and loading controls for maximum output. If the amplifier is delivering about 300 watts output, then reduce the driving power a bit and readjust the tuning and loading controls. Output power should be close to the maximum value obtained above.

For test purposes, increase the plate voltage to about 2,400 volts DC and tune carefully for maximum output, running the amplifier for only a minute at a time. It should be possible to obtain 500 watts CW output on all bands from 3.5 to 28 megacycles at 2,400 plate volts, and with a maximum of 40 milliamperes of control grid current per tube. Cathode current will read about 200 milliamperes per tube. At 2,000 to 2,250 plate volts, the amplifier will deliver about 400 watts at 28 megacycles, and 450 watts below 21.5 megacycles.

Frequently it happens that an exciter capable of delivering 100 watts power output into a dummy load will not supply the necessary drive to the cathode circuit of a grounded-